HW6:Neural network design

You can use the code in our drive as a template.

1) Read the iris data set: Train the network using the training dataset. Test the network using the test dataset.

   Feature Sets :

   i. Train the network using **sepal length** and **sepal width** (input features) for **Versicolor** and **Virginica** (classes)
   ii. Train the network using **petal length** and **petal width** (input features) for **Setosa** and **Virginica** (classes)

NET1: Design a 2-layer neural network (two inputs, one hidden layer, one output layer), use,

- 5 neurons in the hidden layer
- 1 neuron at the output layer.
- The input layer has two inputs (features)

A) For the given two different feature sets (i&ii), compare the accuracy and costs of the network, **NET1**.
Comment on why they are different, even though the network is the same. How can you solve this issue?

B) **NET2:** Increase the number of neurons from 5 to 20 in the hidden layer of **NET1**.
Train using i&ii.
How does increasing the number of neurons affect the neural network performance?
Show the results. Comment on the results.
Compare the performance of **NET1** and **NET2**.
How the models perform on data set given in **(i)**

C) **NET3:** Take **NET1** and add one more hidden layer to obtain **NET3**. The first hidden layer has 10 neurons, and the second hidden layer has 5 neurons.
Train the new network with cases in i& ii.
How does this new design perform? (accuracy)
Compare the performance of **NET1** and **NET3**

D) **NET4:** Take **NET1**, instead of adding one more hidden layer, use four features in the input data sets.
Does using four of the features provide a solution?
Compare **NET1** and **NBET4**

Upload your code and your results as a report. Use HW6_toyNNs as a template.